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ABSTRACT

The changing nature of library and information specialists' training and education is addressed in the following papers on library schools presented at the 1985 International Federation of Library Associations (IFLA) conference: (1) "Information Access and the Changing Library School Curriculum" (Herbert S. White, United States); (2) "Conservation-Consciousness: The Goal of a New Direction in Training for Librarians" (Helmut Bansa, West Germany); (3) "Access to Information and Its Impact on Library School Curricula, The North American Perspective" (Robert D. Stueart, United States); (4) "Problems Affecting the Development of University Libraries in Algeria--With Emphasis on Library Education" (Bahdja Boumarafi, Algeria); and (5) "The Library and Information Profession Viewed in the Light of Technological Change" (Charles T. Meadow and Margaret Anderson, Canada). (THC)

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IFLA GENERAL CONFERENCE, CHICAGO

1985

Division: Education and Research

Section: Library Schools and other Training Aspects

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Information Access and the Changing Library School Curriculum

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

The impact of changes in the information process on library education curriculum is difficult to assess and predict for a number of reasons. First of all, as we all know, the rate of implementation of change varies - not only country by country but within countries as well. In a state university in Indiana we recognize the continuing responsibility to prepare individuals whose first jobs will be in highly technological government and industrial information systems. We also prepare individuals who will be working in small public libraries in which very little has changed, and in which perhaps very little will change. In some ways the changes which the library profession faces are very substantial, almost traumatic. In other ways the role in which librarians interact not only with the sources of information but with their users is in great need of change. When some speak and write on the issue of needed change in library education, they are usually concerned only with the former - the ability to address more complex data bases, to search on line, to request items on interlibrary loan through networks rather than through the mails. If this is the focus on library education, I am afraid it misses the point.

The role of the educational process in preparing professionals for the present and for the future has always been a focus of discussion and controversy, and the recent revival of interest in this topic may be nothing more than a cyclical recurrance. As early as 1923, C. C. Williamson[1] suggested major changes in the preparation of American librarians from the practical skills development by Melvil Dewey and others. Although Williamson's report to the Carnegie Corporation still used training in its title, in fact he was suggesting a great deal more. He was proposing the development of a fundamental

educational and professional preparation base. After World War II, most American universities with library education programs changed their focus from undergraduate to graduate preparation, and began to include in their curricula courses which dealt with concepts and principles. In the last decade several of the library education programs in the United States, and virtually all of those in Canada, have changed to a longer degree program. Although the strategies vary, the clear intent is to overcome at least one perceived problem, that the one year graduate degree superimposed on a subject bachelors degree and even a subject masters degree is not enough. What is taught in that additional time varies.

What ought to be taught has been and remains the subject of continuing controversy, and appears in the last few years to be accelerating. A variety of studies and opinion pieces have suggested that library education is not practical enough, and that what is taught is "irrelevant" to the needs of the "real" world[2, 3, 4, 5, 6]. Other leaders in the practitioner community have argued that what is needed is less of an emphasis on credentials and more of an emphasis on talent. In a provocative article, Patricia Battin[7] has argued for the primacy of a first rate mind, evidence of managerial abilities, and an intellectual commitment to research. All of these issues have surfaced in Great Britain and have been spelled out by Cronin[8].

This brief paper will not begin to attempt to survey educational preparation changes in other nations. One reason is that the author is certainly not qualified, and another is that the length of this presentation would permit nothing more than a catalog listing. However, at the risk of appearing chauvinistic this writer would suggest that these issues, as they represent the differentiation between intellectual preparation and pragmatic training, have received their sharpest level of discussion in these countries. Moreover, the influence of what is decided here reaches far beyond our borders.

Perhaps 15% of the graduate student body in library education and other fields at major universities such as Indiana consists of overseas students, primarily from Asia and Africa. What results from the present discussion and struggle over library education here will have far-reaching effects.

Perhaps the very fact that librarians are discussing, with the right to decide, what their curriculum should be, is in itself a major step forward, although it is one from which this author would take little consolation. We have our examples of the Library of Congress and of Harvard University, which are directed by individuals with no educational preparation in librarianship and up to now at least no demonstrated felt need to acquire any after their appointment. However, for the greatest part we do have the right to control our own credentialing process, and it is important that we neither waste nor trivialize that opportunity.

This writer has had little previous organizational experience with IFLA, and has not presented a paper to a conference since the 1972 meeting in Budapest. It is delightful to be back. However, the intervening years have seen a good deal of organizational experience in FID, which could certainly be called a sister organization. For FID information communication is in the hands of the scientific community, and it is the presumption that subject preparation and expertise take precedence over preparation in the acquisition, organization, and dissemination of information. The role of the future librarian becomes particularly significant as we view the shifting nature of information and its use. What do we really know with any degree of certainty about the future? We know that the total amount of information will continue to grow. That part is easy, it has never stopped growing. We know that through computerized access the availability of information to anyone with electrical outlets will also increase dramatically. Finally, we know that education for the communities we serve has become and will continue to become more specific,

while their needs for information become more and more interdisciplinary. In other words, they will know more and more about less and less.

Does this suggest a changing role for the librarian? Of course it does. The passive model of providing our users with more information, on the premise that they are the only ones qualified to sift and assess it, has never worked as well as we have all pretended it did. Users do not really know their literature. Given its breadth and its diversity, there is no possible way they could. However, there is also no way to admit their ignorance. And so, they are forced to pretend for a great variety of reasons that they know their literature, and of course what they don't know either is pretended not to exist or is assumed to be irrelevant. In a paper several years ago[9] this author suggested to a British audience that the need was for librarians to take on the responsibilities of information intermediaries - to concentrate not on providing our users with more information. They already have more piled up on their desks than they know what to do with, and they are badly frightened at the suggestion that through "improved" access techniques we might bring them still more. They want less information, but they don't know it is all right to make that request, and our value system certainly does not provide any hint of our willingness and preparation, let alone our insistence, to assume this burden. The value system I am suggesting is somewhat foreign to the traditional ways in which we measure ourselves. It does indeed concentrate on techniques of access, as contrasted to measurements of holdings. Furthermore, it argues for a specificity in which an increase in circulation becomes at least potentially a negative indicator. Quantity and specificity are antagonistic value systems in this scenario.

Can librarians be prepared to work effectively in this setting? I would argue that they certainly can, but I am not certain that they will be. In part this is because we confuse the very different concepts of education and training.

In fact, these have become in the English language one continuous word, educationandtraining, in the same way that we have combined libraryand informationscience as though they were the same thing.

Education and training are very different concepts, and generally education in a professional environment precedes training. It does in medicine, and it does in law, although the processes are not totally sequential. There is some overlap. In one sense I find the very title of your section disheartening - "Library Schools and Other Training Aspects." The implication is clear - library schools train, and of course others train as well.

Do we train? Of course we do, and the often heard argument suggests that we don't train specifically enough. The articles referred to earlier clearly indicate a preference that library schools prepare students better for today's jobs. As this writer has argued somewhat cynically[10], the ideal state is one in which candidates can be hired at 9 AM and begin attacking the backlog at 9:30 AM. It is an understandable reaction to pressures of having too much to do with staffs too small for the assigned task. However, it is preparation for today, and this sort of value system suggests that planning for tomorrow takes a lower priority.

Education and training are very different things, and to some extent library schools must train, but never at the expense of education, because education (why we do what we do) must not only precede training (how we do it), but it is more important. Individuals who are educated can be trained and retrained as priorities shift and as the information spectrum shifts. Individuals who are only trained will strive mightily to shape the need to their system rather than shape the system to needs, and we know from looking at the library and information world that by and large they succeed. Education and training are not only distinct processes, but they are both continuing processes. The

survey referred to earlier[6] clearly indicates that both training by the employer and continuing education and training through a variety of mechanisms are perceived as desirable, but that there are no mechanisms either for deciding what should happen or for assuring that it does happen. The library school degree is still largely a one time preparation for a whole lifetime of work, regardless of what changes take place. That approach is not only training, it is probably poor training. It is certainly nonprofessional, and may explain the low esteem in which we are held.

Library schools operate in the present, and the more forced they are to prepare for "practical" skills the narrower that time focus becomes. Good training facilities will in 1985 prepare their graduates for 1985 rather than 1970 positions (although as noted earlier there are 1970s positions still in existence in 1985). In any case, they will not be prepared for the year 2000. No school can do that now. What we can do is to provide an educational base on which later training can be applied, but all of that presupposes that training opportunities will not only be provided, but demanded. By and large I think that Patricia Battin and those who echo her thinking are correct. Broad skills and intellectual commitment are more important in the library educational process than specific tricks of the trade. Tricks can be learned later, and new tricks will be required by new technology. Moreover, as Daniel Bell[11] has suggested, we will be enjoying the luxury of a large coterie of service professionals with specialized skills. Librarians are service professionals, but there is no reason for us not to utilize service capabilities by others as well, when these can help us or rid us of less important tasks. The preferred role for the library professional which I envisage is one of managing both the accelerated access to information systems which technology has made possible and will continue to enhance, and of managing the process of making such information flow fit the needs of users. It is

for these reasons that broader skills and intellectual competency are more important than the training levels on which we seem to focus.

The phrase "user" needs also requires some definitions. We will not determine user needs simply by asking users, and a large number of surveys which profess to determine user needs do nothing more than measure user demands or user preferences, based on the definition of a library system as they assume it must be. It should occur to us that if we provide more open-ended questions we might receive answers which are both different and more inviting. What must be changed is the relationship between librarians and their users into one of cooperating professionals, dealing with problems and not with mechanisms. We can devise mechanisms ourselves. It is probably not we but today's students who will spearhead that change, if indeed it is to take place. There is no doubt in my mind that it should take place, because it is good for us and because it is good for the successful consummation of the information search process.

How does all this affect what we should teach in library schools? Certainly there must be a mixture of education and training. Concentrating on only the former would be impractical, because this is more than an intellectual exercise. Concentrating only on the latter, as some practitioners would have us do through curriculum validation of basic skill competencies, produces graduates who not only work as clerks, but even more importantly who think like clerks. And this is something we cannot afford.

What is needed in the continued development of curriculum is an ongoing dialog between practitioners and educators. Both have their priorities, and it is essential that neither group be permitted total victory. The dialog must contain the complete spectrum of options for a lifetime professional commitment to both education and training, a commitment that must be demanded and supported by employers as well as professional bodies. It can't all be done in

the one educational experience that the library degree represents, tempting as such an orderly suggestion might be. It can't be done for what are primarily two reasons. First, the knowledge of our field grows and changes, and even the best of library schools can only teach what is known today. The worse ones teach as news what we knew a decade ago. Secondly, the time for the initial pre-professional education process (you will note that I studiously avoid the word training as professionally degrading - I wish I could urge you to change the name of your Section) must be related to the rewards which await the graduate. As we know, at least in those countries in which starting salaries are determined by the free application of economic market factors, those salaries are not high. Studies as those by Nancy Van House[12] must give us pause if we think simply of adding to the curriculum. Van House has told us that we already lose highly qualified students to better paying careers. The risk we clearly must avoid is that we might lengthen and perhaps even improve the quality of the educational program, and in the process worsen the quality of the student body.

The issues we face are not simple, and they defy simplistic approaches. On the other hand, if the solutions were easy and obvious, they would also be boring. I can assure you that the future of this profession and of its educational component will not be boring.

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CONSERVATION-CONSCIOUSNESS: THE GOAL OF A NEW DIRECTION IN TRAINING FOR LIBRARIANS

AUTHOR: Helmut Bansa, Bavarian State Library, Munich, Federal Republic of Germany

ORIGINAL LANGUAGE: German

SUBJECT HEADINGS: Conservation - Restoration - Training - Library Schools - Curriculum

ABSTRACT: In order to overcome the largely unsatisfactory situation in the area of library conservation and restoration, especially to overcome the comprehension difficulties between the librarian, who is responsible for planning for conservation and restoration, and the technician, who carries out the necessary procedures, it is generally felt that not so much the learning of a special science is as important as the infiltration of the entire library training with a special awareness of conservation and restoration. A starting point for this infiltration should be the subject "book technology" for which a curriculum is proposed.

At the start of my lecture I would like to cite two quotations, both from librarians who are well-known and active in IFLA. Both quotations pertain to the conservation and restoration of library collections. The first said, "There is a huge gap between the way a librarian and the way a conservator or technician looks at and regards conservation and restoration." The other librarian said, "One cannot talk to conservators. Each of them says something different, and constantly says the opposite of what his colleagues say. A librarian will never learn anything useful, anything generally acceptable from a conservator which will help him to act, plan and make correct decisions."

Both quotations--I trust that the sources, who will remain anonymous--will forgive me if the quotations are not word-perfect--reflect the personal experiences of those librarians, and in that sense are very pertinent. I can well imagine how these experiences might have occurred. However, one can just as easily maintain that both these statements are utter nonsense! It must be utter nonsense; were it not, then the situation in the area of conservation and restoration in libraries would <u>always</u> be as unsatisfactory as it is today.

Numerous recent publications bear witness to the fact that the situation is and is considered to be unsatisfactory. There is hardly any conservation conference or further education meeting which does not have lectures by special librarians about manuscripts and restoration, about the history of the book, and about their point of view, their demand for the results and quality of the work, the accomplishment of which lies in the hands of conservators. There is hardly a librarians' meeting since the 34th Annual Conference of the Graduate Library School here in Chicago, barely a special journal for

librarians, in which there are not articles about restoration. The English publication Journal of Librarianship even devoted its entire April issue to the theme "Education for Conservators." This specific theme was also a topic in the 1981, 1982, and 1983 IFLA conferences, namely in the form of numerous "country reports" about the training of conservations and about the transmission of conservation knowledge to librarians. In 1986, IFLA's exclusive club, the section of heads of National Libraries, is in fact planning its own meeting, the Vienna Conference on the Preservation of Library Materials.

At this point I do not simply want to offer another contribution on the theme of "conservation knowledge for librarians" (or conversely) to those of the already-mentioned IFLA meetings and the Journal of Librarianship as well as those which will certainly come in the future. I have come to the feeling that such essays don't help much. Nevertheless, the first appeared as early as 1970, as a result of the Annual Conference of the Graduate Library School, and one would think that by now these articles might have had some effect. When one reads all the texts which enumerate what facts a librarian should know in order to be a competent employer or real partner for the conservator as well as for the technician or engineer, from whom he demands the acceleration, the mechanization and industrialization of conservation and restoration procedures--when one reads that the same demands are continually being made, and yet sees how the need for lectures and essays constantly increases, in which always the same thing is repeated, then it becomes clear, that there is not simply just a need for information. It is not the transmission of information from which understanding and judgment can be cultivated. At stake is the education for a new

consciousness of librarians which will be as difficult and take as long to attain as--let me here make a rather daring comparison, now that I have already gotten up the courage to say some things in this lecture which will certainly offend a number of you--as difficult and long in attaining as the re-education of the German people from an authoritarian to a democratic political thinking. To develop this image--just as in there were even good democrats in the old German empire, so there are already today librarians with the right kind of conservation-awareness. And just as there were leading philanthropists among the followers of authoritarian principles at a time when that was the dominating school of thought, and just as certain decision-processes moved more easily then than today, so should certain aspects of today's librarianship-consciousness be carried into the future.

The majority of today's librarians, however, are standing at the edge of the great chasm mentioned at the beginning of this talk, and look across to the other side. Here and there one might see something on the other side which excites attention, which almost seems like a miracle. One could include in this image all the visits to workshops and laboratories which are part of almost all library training in the U.S.A., Canada, England, France, Italy, Scandinavia, and Germany. There, the student is shown wondrous things about which he is expected to marvel. However, then the librarian sees people on the other side of the chasm who behave oddly, who are constantly bickering with each other, who scream and complain, to whom he can't make himself understood and whom he just can't reach. He doesn't trust the tope thrown to him by the wild ones on the other side--and quite rightly so. The path down the chasm and up to the other side

leads through a river down there--too much effort. He needs a bridge.

The name of this bridge is: education. I am using this word in its weightiest context: alteration of consciousness, changing of old habits, giving up one's usual ways, the way of thinking with which one feels comfortable, to which one can respond automatically for practicing a new thinking, a new form of experience, new forms of behaviour which in turn influence every-day professional life--things which instinctively lead to an answer of "yes" where one previously just as instinctively said "no," as well as the other way around. I am convinced that this goal is only attainable in a long period of time, and that in fact a great physicist's statement in regard to relativity and the quantum-theory is very apt: new ideas don't succeed by convincing adherents of the old ideas: they succeed once the adherents of the old ideas die out.

New information is part of the new consciousness. I don't want to discuss that which is really librarianship, that which, according to the area of specialty should, in varying depth, be part of every librarian's training--although I know that it often is not.
I will not discuss the history of the book, art history, manuscripts, techniques, watermarks, fingerprints and (setting up a workshop).
I assume that a librarian knows who the Elzeviers and the Didots, Aldus Manutius and Anton Koberger were, what the Flemish and the Reichenauer Schools were, that he knows the basics about printing and publishing, about broadsides and posters, company and governmental reports, about unofficial publications and their value--or lack thereof. I do not want to place emphasis on what the librarian learns, what deacification is about, that acidity destroys paper, that groundwood is bad for permanence, and that he or she may have watched the processes of bleaching foxing stains or lamination of

fragile paper at least once. All of the above, which can be demonstrated in one or more classes and visits to the workshop tend to sit unhappily on the surface and all too often do not coexist easily in minds and hearts which are filled with ideas of "transmission of information" and "consolidation of holdings", with thoughts of acquisitions policies, cataloging rules, reader advisory services, acceleration of loan-traffic and, in any event, especially for librarians of older collections, a sense of aesthetics and antiquity. The "new librarian" cannot grow out of merely the transmission of information--quite apart from the fact that the student cannot generally keep the newly-learned material in his head. I have heard from education specialists that the acceptance is, at best, 20%--in other words, one should repeat the information which a student should really remember at least five times--each time in another context.

And the context is all-important. The data which can be assembled under the subject heading "conservation" should not just sit on top, like the whipped cream on a cake, or be tacked on at the end, like an appendix to a classic subject such as the history of the book. It must be raised intensively and often. At first, as a grounding, in its own systematic curriculum. From then on it should infiltrate all other subjects taught. The basic course should inject the librarian with the realization that books are not just information-carriers, but that they are also a structure of complexly organized materials, which, like all highly-ordered materials tend to be in a state of disorder.

Library-oriented information about book materials are included in a curriculum that might be organized as follows:

0.	Introduction
0.1	Summary and outline of the learning goals: books and other library collections as material objects
0.2	Selected literature. The bibliographic situation.
1.	The materials of the book and other library collections
1.1	Writing support materials
1.1.1	Paper
1.1.1.1	Definition. Fibres: cellulose fibres, groundwood, rag, Japanese fibres. Fillers: clay, calcium carbonate. Sizing: resin, animal glue, starch, alkylkedendemers. Coatings. Additives and impurities: alum, heavy metals.
1.1.1.2	Cellulose: structure and deterioration (oxidation, hydrolisis, cross-linking)
1.1.1.3	Paper manufacture
1.1.1.4	History of paper: the road from China across the Islamic world to Europe and the technical development of the paper industry
1.1.1.5	Types of paper: drawing papers, bookbinding papers, technical papers
1.1.2	Other support materials and information-carriers
1.1.2.1	Historical and exotic writing support-materials: papyrus, parchment, palm leaves, bark rind, birch bark
1.1.2.2	Modern information-carriers: film, sound and magnetic tapes, gramaphone records, videodiscs
1.2	Writing materials
1.2.1	Printing inks
1.2.2	Inks and pigments: dyes, pigment binding agents, agents for complex compounds

1.2.3 Film: silver salts, diazo and vesicular, color film

1.2.4 Digital information storage

1.3 Binding materials

1.3.1 Cover materials

1.3.1.1 Cover papers: see 1.1.1.5

1.3.1.2 Covering fabrics: thread-count, kind of weaving, finishing, Artificial leather

1.3.1.3 Leather. Sources: Goat, calf, pig, sheep. Tanning and tawing: vegetable, mineral. Graining of goat leather: morocco, oasis-goat, maroquin. Parchment as a cover material.

1.3.2 Additional materials

1.3.2.1 Cloth: gauze, jaconet, mull,cambric

1.3.2.2 Threads and cords

1.3.2.3 Adhesives: white glue (PVA), hot glue, paste methyl-cellulose, hot melts, self-adhesive

1.4 Protective materials: film sheets and folders of PVC, PE, PEPT, (polyvinyl chloride, polyethylene)

2. The manufacture of the book

2.1 Summary: manuscript, composition, proof, correction, makeup. Electronic typesetting

2.2 Techniques of production

2.2.1 Composition techniques: typesetting, cold setting (linotype, monotype, hand setting)

2.2.2 Printing techniques: offset, letter press, roll press, intaglio, ink-jet

2.2.3 Gutenberg's invention. Technology and the socio-

	historic background. Development up to the present from the viewpoint of these two aspects.
2.2.4	Techniques of illustration
2.2.4.1	Chemigraphy: halftone process, rotogravure, photogravure, collotype
2.2.4.2	Original graphic processes: woodcut and wood-engraving, copperplate engraving, etching, lithography
2.3	Further applications of printed material
2.3.1	Industrial binding: folding machine, machine sewing, production of covers. Production line for books. Dustjackets and packaging
2.3.2	Hand and retail binding
2.3.2.1	Operations in the bindery: collation, pulling, guarding, knocking-down, backing, pressing and lining, etc.
2.3.2.2	Binding types: pamphlet, half and full bindings, etc.
2.3.2.3	Qualitative requirements of library binding
	Pertinent instructions
3.	Copying books
3.1	Photographic processes: microfilm, microfiche: scaling, proportions, screen. Halftone, large-size negatives. Colour photographs
3.2	Electrophotographic processes: direct copy and reader printers
3.3	Facsimile
3.4	Use of copies of books: reading, duplication and reader-printer machines

3.5	Significance of copies for library administrators
4.	Handling of books in libraries
4.1	General procedures: collecting, binding, installation
4.2	Collection marks
4.3	The bindery: duties, organization, equipment, budget. Cooperation between the library and the binding trade
4.4	In-house binderies: duties, organization, equipment, aspects of business management and economics
4.5	Storage and use
4.5.1	Storage construction and furnishing
4.5.2	The climate for books. Equipment for checking and control. Problems of full and partial air-conditioning
4.5.3	Exhibitions
4.5.4	Limitations on use and education of readers
4.6	Conduct for catastrophy: emergency measures, helping institutions, processes for drying books
4.7	Cleaning and minor repair of books. Leather dressing
4.8	Book restoration
4.8.1	In general: basics and ethics of restoration Selection criteria. Costs
4.8.2	Work on paper (and parchment, etc.)
4.8.2.1	Chemical treatment: washing, de-acidification processes. Disinfection, bleaching, stain removal, etc.
4.8.2.2	Consolidation: re-sizing, splitting. Laminating with acetyl cellulose, polyethelene, polymethylate-acyl ester, PA. Combined re-sizing/deacidification/leaf-casting.
4.8.2.3	Filling-in: applying mends and leaf-casting
4.8.2.4	Mounting and encapsulation

4.8.3 Working on a binding: basics and summary of binding history/techniques

4.8.4 The book-conservator: professional image and training

5 Review and repeat: conservation as a duty of libraries.

This is not the moment to discuss this curriculum, which would in fact be necessary to better understand it. Many of the subject headings represent huge areas of knowledge, which obviously could only be touched upon. The selection criteria for the budding librarian is always permanence. Long-term storage. Danger of destruction. Correct handling. Protection from damage. The budding librarian does not need to know the difference between mechanical and thermochemical, between brown and white groundwood; he does not need to know anything about the different types of aluminum siclicates and other fillers used by the paper maker. However he must be aware as much, as if not more than said paper maker, especially in regard to permanence and aging, of the basic difference between calcium carbonate and all other fillers. A part of the librarian's basic general knowledge must be to know the earliest paper mill in Europe and in America, and in his home area, as in 1.1.1.4. Also necessary is a knowledge of those technical inventions which led to the worsening--or improvement--of paper, an area of study first researched by James Barrow. One can introduce the student to the whole history of paper from the viewpoint of aging and permanence through the finds in Central Asia, the displacement of papyrus from the Orient and of parchment from Europe, and from the products of de la Lande and Wenk, Schaffer, Robert, Illig and Kellner--at least in the opinion of this teacher. It is of course senseless to attempt

to make a printer or type-setter out of the budding librarian in Chapter 2. I feel that even the practical work in a bindery which is a part of many training programmes is not very useful. The student, a person of the mind, is just as respected as a leniently-treated outsider in the company of the craftsmen. He is permitted to bind a pamphlet, and may print a title. This will bring him nothing. But he should learn to grasp the construction of a binding, he must understand the function of the hollow tube, the various end-paper techniques, the knocking-down and the backing.

The correct selection from the mass of material will be a major difficulty for the teacher of the course outlined above. One could call it "Book Technology." However, even with the most intense concentration there will be more material left over than most students can remember through notetaking and later reading. It cannot be arbitrarily abridged; a self-contained entity must remain. The lectures should not be made up of series of details lined up together--they need the connecting transitions of an intellectual ribbon. Care should also be taken that the students hear the material which they need to remember at least five times, each time in another context. They get the information two or three times in the course outlined. Optimal atmospheric conditions are discussed in 1.1.1.2 and 4.5.2; deacidification and alkaline paper are discussed in 1.1.1.1, 1.1.1.4, and again in 4.8.2.1. The material appears in other sections at least two or three times.

This last point: the body of knowledge necessary for conservation should not only come up in special courses, but also at other times, so that it should penetrate the entire library training--I feel this is extremely important. The information must

penetrate the librarians' training in order that later their daily work is based on informed decisions. A librarian should not just talk about conservation, he should practice conservation; he should not demand it of others but carry it out himself. Conservation is less a matter of the large, unique projects as much as it is small continuous steps. Large projects run the risk of large failures; however, the goal is always reached with small steps. An enormous amount can be done for conservation during the building of libraries, therefore conservation information should be offered in the subject "Library Building," repeating the material from the "Book Technology" course as discussed above.

Some of you who know the curricula of library schools might say, "that's a lot of material." You are right. Not every librarian needs to know conservation inside-out; for collections of text-books, public libraries, everywhere that books age faster than they fall apart, conservation is not an issue. However, one can just as well say that the essential selection of the material outlined above is not enough for the librarian who may later shoulder the responsibility for conservation in an archive or National Library. It might be worth thinking about offering students extra optional courses, for example seminars allowing them to work independently. Not, however, with a bone folder or scalpel or laminating-machine. Only to amplify theoretical work, for instance in preparing a report on the theme of "technical possibilities for consolidating brittle paper." Seminar participants can prepare such reports using the conservation and restoration literature available. Possible report subjects could include "The Deacidification of Paper," "Historic Bindings", "Inks: Permanence and Possible Damage."

I will not continue to expound on my proposed curriculum and the outlined course to the "New Librarian." I feel that the subject "Book Technology" alone should fill ca. 35 class-hours; the optional seminar for prospective specialists about 12 sessions. I would rather let you ask me questions, if you have any. I have a few myself that I am unable to answer: who should teach the "Book Technology" course? No where in the world is there organized training offering the necessary combination and selection of information. Everyone who has received some sort of organized training which includes more or less of the above-described material --the chemist, the paper engineer, bookbinder, restorer--each of them must forget more than he remembers of the information he can teach. The second major problem for the book course is, after making the right selection, is to come up with the right, library-oriented practical presentation. A non-librarian who does not deal with the daily practice and workload of a library specialist will have a hard time of it. There is little more than that the librarians themselves read up on chemistry and technology in order to be able to teach the subject themselves. The fact that no-one has done this to date, or that nowhere is as thorough and permeating a curriculum available is quite simply due to the fact that there are no teachers; the material and technical aspects are an unliked additional burden, something from the "other side" of the chasm, for "normal" library-school teachers as much as for normal librarians. Therein, in my opinion, lies a significant reason for the unsatisfactory situation in the area of library conservation.

The librarian is one of the people who has to learn, but he is not the only one. The wild ones on the other side of the chasm have to learn. They must give up their quarrelling, or rather, they must

learn to quarrel in a civilized fashion; they must learn to speak in a way that one can understand them. It seems paradoxical that the re-education could be easier for them. For one thing, we have already dealt with noble savages like Chgachgook and Queequeg. For another thing, however--back to reality--there is not yet, in fact, a profession of conservator/restorer. There are no solid traditions, no traditional learning plan. This is all in the process of beginning, and it is easier to build a new house according to specifications than rebuilding an old house. However, to report on all the attempts to set up an organized system of training for conservators--already successful in some places--to report about the curricula of such schools and academies, about the proportion of practical and theoretical study, about ability and knowledge: technical, historical and library information--that is the stuff of another lecture.

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Section: LIBRARY SCHOOLS AND OTHER TRAINING ASPECTS

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ACCESS TO INFORMATION AND ITS IMPACT ON LIBRARY SCHOOL CURRICULA THE NORTH AMERICAN PERSPECTIVE

by

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ACCESS TO INFORMATION

and its Impact on Library School Curricula

The North American Perspective

ABSTRACT

An attitude and a commitment to access to information is a basic concept which is at the heart of librarianship and therefore of library education in North America. In that regard, it impacts almost every component of the whole curriculum, with each course touching, in one way or another, the ideas of access to information in all forms which are easily accessible and understood by seekers of information. Information is made more easily available with the introduction of new technologies; therefore, that aspect is most important. But so is a strong commitment to the principles of freedom of access to information.

Discussion focuses on recent developments in curricula in library and information science programs in North America. Several curricula issues involve: standardization, bibliographic control, intellectual freedom, resource sharing and networking and technology. They relate to the development of total information systems each of which is important to society as a whole.

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INTRODUCTION

500 years ago Gutenberg's invention of moveable type changed the nature of information transfer in the west. Since then we have developed a complicated if not yet sophisticated information dissemination process which, until recently, was predominantly print oriented. Now electronic technology has changed the reliance of print on paper and is challenging many of our previously held assumptions about that medium. Possibilities of personalizing information have led, as one writer describes it, to the disappearance of the information float, that being the time it takes from when the decision is made to acquire information until the time that information actually is delivered. (1)

The library, as one element in that total information system, is an important component through which "society is held together and a culture is created and maintained."(2) If we consider a model in which the flow of knowledge and access to information in society is conceptualized as a complex social system in which the individual, groups, and organizations are linked together in overlapping and interrelated communication activities, roles, and networks, then we can see the challenges to our professional education programs in meeting the needs of a changing environment. Professional schools are the key factor in this evolutionary process because:

1) they maintain a continuous link between the profession and the expert resources of faculty which, after all, is a most important leadership component in the development and maintenance of quality curricula;

2) they replinish the profession by recruiting, educating, and socializing successive generations of new professionals; and

3) they generate much of the applied research which constitutes the expert knowledge of the profession.

Over the past century library education in North American has evolved, like most other professional education, from the apprenticeship to graduate education in institutions of higher education.(3) The purpose of education for the profession has not changed greatly over that same period of time, but its content and techniques have. That purpose is not to impart a narrowly defined set of skills , but rather to define a set of criteria which individuals entering the profession should meet. This conceptual understanding is the foremost consideration, not those skills and techniques which easily become obsolete and which can and perhaps should be learned on-the-job. There must be an intellectual orientation to skills and methods, both technical and behavioral, before there can be an effective application of those skills. In the

educational process for the profession the focus has shifted, over time, from the transmission of knowledge and insights from the teacher to the student, to is acquisition of knowledge, skills, and attitudes by the learner, with the help of the teacher as facilitator.(4) As an important element in the evolution of the profession, library education has remained in the unique position of being able to identify needed change and then acting as a change agent by providing the intellectual environment and stimulus for the analysis of that change and the applications which should occur.

Possessing that educational background the librarian then functions as an information intermediary between the needs of a user group and the larger world of information. He or she acts in a multi-role of negotiator, identifying needs; facilitator, providing effective search strategies; educator, familiar with the literature in all of its formats; and information broker, providing current awareness services for the population to be served.

The librarian, educated in North America accepts the concept of librarianship as a profession whose services are performed both inside or outside of the building known as the library, and that it makes little difference to the information seeker whether the access point is over the reference desk, via telephone, satellite, or laser beam; and whether the final output is book, microform, videotape, cassette, disc, cable television, computer printout or screen vision. The librarian is being educated to think in those terms and to manipulate information in all of those forms.

In such a mileau, access to information, both in its literal sense and in the broadest philosophical sense, impacts upon every aspect of the curriculum. The acceleration of change - in technology, in communication, in urbanization, in international relations - has meant a swifter arrival of the future in a vastly different form than was expected even yesterday. Just as the application of technology has changed the way society uses information, so have curricula changed to meet the sometimes new and sometimes enhanced charges of preparing librarians and other information service professionals.

The curricula reflect those components which have been identified as basic to library education, someone called them the "Three C's + 1" - that is collect, catalog and communicate to which must now be added the computer, the instrument for achieving the first three.(5) Not only do we have a commitment to placing the right information in the right hands at the right time and in the right format, but we also have an ethical commitment to society. That service attitude of "free" in the sense of open access, is promoted in library schools, and reflected in curricula. Recognition that all people have information needs - expressed and unexpressed - is the first step toward fulfilling those needs and is another component in many

programs. This concept is strongly supported in the recommendations which came out of the 1979 White House Conference on Library and Information Services, which recommended "That optimum and equal access to library and information services for all citizens be provided through libraries, library systems and networks."; and "That access to information be insured by removing barriers, legal and otherwise, that delimit accessibility.

Creating curricula in light of these factors is still relatively easy, but to compose a program that is superior in that it is totally oriented to establishing a climate of access to information is one of the most important but difficult charges to all of the North American professional schools. To say that there is currently a great deal of activity in library education programs is an understatement. Schools are constantly reviewing and revising their curricula in an attempt to remain on target with developing trends and techniques to cope with both long-existing issues and recently emerging ones. That frenzie is occuring with the belief the systematicchanges will better prepare librarians for the challenges of the decades ahead in providing access to information, which remains our primary goal.

Emphasis on philosophy, communication and learning process, objectives and attitudes, and the inculcating of a critical questioning approach will continue to be refined and adjusted by the rate of technological change, by the development of new knowledge and techniques, and by requirements to provide for a wide, increasing range of specializations.

The library school's responsibility is now recognized as one of providing full opportunity to use all of the approaches - traditional, new and in the developing stage - that relate to information handling.(6) The "core", or those courses and components deemed necessary for every student to take, emphasizes access to information and most often consists of an introduction to the profession and to its tools and techniques. That introduction usually includes a social/historical background for the profession, a philosophy of reference, cataloging and classification, and the management process, including a research component which has been assimilated into many programs "in order that the practitioner may be a contributing scholar along with the delivery of professional services."(7) The "core" looks at the generation, acquisition, organization, management, distribution, evaluation and use of information and information services.

Curricula reflect the electronic revolution - both in the form of new courses dealing with current developments and in revisions of traditional courses to encompass the application of new technology where appropriate. With the "Organization of Knowledge" and "Reference/Information Services" courses, being required, no student can emerge from a professional school without having worked with computer-based catalogs and cataloging, searching and data base construction, bibliographic

and numeric networks, and other such adaptations of technology to library operations and services.

The future of curriculum development in library schools rests upon being able to balance that core curriculum and other components which are desirable to maintain, with new ones and to use evolving technology to address access to information which meets the needs of all citizens, whether preschool children exploring the new world, or sophisticated medical researchers needing instantaneous information to save lives, whether senior citizens needing information to cope with daily problems or college students requiring help with the writings of Plato; whether business executives needing detailed market information to make important decisions or lwayers seeking information on previous court decisions to effectively defend a client; whether recent immigrants wanting to learn a new language or an adult struggling to become literate for the first time. An attitude of service to "special" populations is reflected in the curricula.

The name change, which has occurred in almost half of the ALA accredited North American schools in the last ten years, is a formal acknowledgement of one specialization which has developed in the educational programs, that is "information service." Since access to information and the technology necessary to provide efficient and effective access is one of the strongest factors in the future of librarianship, most schools have introduced courses related to automated systems, information technology, networking and media.

Machine-readable information sources and the ability to access them through telecommunications networks has increased the quality and quantity of information services and is creating what someone called a geographic democratization - where it no longer matters where the physical item is located. One remaining major issue is that of information as a commodity and the tendency to correlate the economic value of information with its intrinsic worth.

Other specializations, reflected in both individual courses and whole programs, have been developed. For instance, there are currently a variety of specializations offered in accredited programs, including:

1) Archives Management which is offered by about one-fourth of the accredited programs, with eight schools offering joint degree programs with History Departments;

2) Health Sciences/Medical Librarianship is offered as a specialization by about one-third of the schools with another one-fourth offering at least one course in the subject;

3) Law Librarianship specializations are offered by about one-fourth of the schools, with nine offering joint-degree programs in conjunction with law schools, and another one-third

offering at least one course in law librarianship; and

4) Other specializations, including Music Librarianship, Art Librarianship, Business Librarianship and Records Management, to mention but a few.

THE CURRICULA

With that background in mind only a few of the major areas in the curricula of North American graduate library education programs which specifically address access to information will be discussed. It is not clear that "ACCESS" has had an impact on the curricula, since thisis somewhat of a chicken and egg situation: which came first, the commitment to access as reflected in the ever evolving curricula, or the pressures by society which then forced such "access" considerations. One approach connotes a leadership role by professional education and the other reflects a more passive role. Although I believe the former one is a more accurate reflection, that issue could be the topic of an extended, heated debate, but that is the subject for another time and not our charge today.

If we try to categorize curricular content as it relates specifically to access, the first of those categories taken in alphabetical order by title would be Bibliographic Instruction; or " Instruction in the Use of Libraries"; or "Use of Information Resources" as it is variously called. This is teaching librarians to formally teach users about access to bibliographic records, and access to information in any form. Assuming that librarians must take a more active role in the teaching-learning process, programs of Bibliographic Instruction have been designed to make the library's resources a more effective instrument in that process. The need to address that topichas slowly crept into the curricula, but most often it is integrated into the attitudes engrained in the total program, rather than conceived and carried out as individual courses. This approach has not been totally satisfactory for certain segments of the profession, particularly some academic/research librarians.The important thing is to realize that we must do a better job of educating librarians to be educators.

In that same vein, the whole concept of Information and Referral is concerned with putting people in contact with an extensive variety of services, activities, and information sources, both library and non-library, that might serve their needs. In the past there has little systematic attempt to direct the public to sources outside the library or to coordinate in-hoouse reference questions with relevant community resources outside of the library. Many professionals now believe that recognizing a responsibility for accessing a great body of unrecorded community information is an important role for the library, particularly the public library and this is reflected in

a series of courses which address that dilemma. For example, a senior citizen wants to move into safe, reasonably-priced housing but dosen't know where to start to find out how to locate such housing. Is the answer to that question as legitimate as a basic reference question to be answered from traditional material sources in the library? Some would argue that it simply expands the reference function. Taken one step further many people don't even know the answer to their problem exists or that assistance might be available, and that also is a responsibility.

This, then, brings one to consider Information Seeking Behavior in society, a topic which explores the flow of information, including identifying those users or future users and their existing or potential needs; the economics of information; the information industry; and the role of libraries in that total information transfer process. It is the study of the factors and influences, both individual and social, associated with people needing, using and acting on information.

Speaking of needs and access to information, perhaps one of the most difficult to categorize but at the same time most important in the curricula, is the issue of Intellectual Freedom and Censorship which assumes adherence to the principle of freedom of access to information as a basis of professional service to the user. Such social responsibility is not merely a matter of altruism, but a conscious recognition of the importance to the society as a whole. In the process one must investigate and encourage a strong commitment to the principles of intellectual freedom and freedom of access to information and freedom of speech, the press, the arts, and access to ideas and information controversial and otherwise. North American librarianship's major intellectual freedom policy is outlined in the Library Bill of Rights which affirms that all libraries are forums for information and ideas. In addition, ALA's Code of Professional Ethics reminds us that libraries significantly influence or control the selection, organization, preservation, and dissemination of information. Therefore those working in them must be explicitly committed to intellectual freedom and the freedom of access to information. We have a special obligation to ensure the free flow of information and ideas to present and future generations. One contemporary issue has been brought on by the perfection of electronic computers and communications satellites. Attempts have been made to restrict the flow of information through those channels. This is resisted by librarians, but nonetheless a hotly debated topic.

In a somewhat realted vien, curricula include the study of Information Systems, that is the role of information agencies and the political, economic, technological, professional, educational and social factors affecting information. By looking at patterns of access to information and how they have changed organizational patterns, one must also examine the rise of information utilities. With online systems accessing over 250 million individual records in hundreds of bibliographic and other

databases in a variety of formats throughout North America, Schoolshave integrated use of this systems approach to new techniques and technologies in units in courses, entire courses, sequences of courses, and workshop modes. All schools now provide some form of online instruction and most accredited programs offer indepth concentrations in the area.

Access to those total systems is enhanced, further, through Networks and Consortia Building. Modern library networks enhance the library's internal operations relating to cataloging, serials, circulation control and acquisitions procedures. In addition, refinements in computer and communications technology, including microcomputer hardware and software use, have made bibliographic access and interlibrary loan common to all types of libraries and almost universal in their appeal and use. In addition, resource sharing through the development of multi-type library and information networks emphasizes the information process as it functions within socio-political,technological, communications, and human environments. Factors to be considered in that mileau are: 1) the information systems technologies (both computers and telecommunications); 2) the policy issues relating to resource sharing and management of information - such as conflict between Freedom of Information Act and the Privacy Act, and cooperative collection development and preservation; 3) the control of information; and 4) balancing the cost of delivery with the assurance of equal access. (8)

Perhaps a final major category relating to the broad issue of access, as reflected in curricula, is the topic of Standards and Standardization. Since the development and use of technical and procedural standards can improve effectiveness, reduce cost, and extend the use of library and information services, it is important to develop, review, and adopt national and international standards for publishing, producing, organizing, storing, and transmitting information. Standards for hardware and software compatibilities, computer and network protocol, and machine readable information are also necessary. Effective standards facilitate the exchange of information between public and private sectors, and across national boundaries, a goal which must be accomplished if our mission is to be fulfilled.

Library education, just as the profession itself, stands at a crossroad, and the temptations of the wrong route, as well as the challenges of the right one are clearly evident.

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Problems affecting the Development of University Libraries in Algerie - with Emphasis on Library Education

by

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PROBLEMS AFFECTING THE DEVELOPMENT OF UNIVERSITY LIBRAIRES IN ALGERIA

1/ General background.

- After more than one century of French ruling the Republic of Algeria, situated in the North-West of Africa, came into being in 1962. 80% of the total population were then illiterate. It was hoped that by the early eighties 50% of the actual population - 20 Million- would be able to read and write. For the government showed a widespread interest for the promotion of cultural and educational activities in all parts of the country.

2/ National Development policy.

- During the period of occupation, the French community had held nearly all administative, managerial, academic and business posts. Their massive departure at independence left the wheels of the country's economy barely turning. In addition to that the new Republic was a scene of struggle for power amongst contending parties and classes created during the French occupation.
In the early years of independence the government devoted primary concern to increasing the economic resources of the country and establishing a new social order.
Algeria's national developement policy has been proceeding along the lines of socialism. For, making all the natural wealth, public institutions and utilities the property of the state, and making industry, agriculture and education planning subject, to state supervision and organisation in order to lay down the basis for socio-economic growth.

3/ Expansion of Education.

- A good starting point is to take the lead from what Ekepe quotes in his article.[1]

> "For good progress, we must have Education, For Education of the right type, we must have a bigger revenue. To get bigger revenue, we must have bigger trade. And to get bigger trade, we must have more and far better systems of transportation than at present exists."

This statement implies that a good general infrastructure is needed to set things in train for an overall development. In short, as far as education is concerned attempts were made to keep the institutions of learning opened. However, the acute shortage from which suffered these institutions has resulted in an inadequate educational system at various levels. Solutions for this were sought in the cultural revolution which brought winds of change in education in general with main emphasis on tertiary education. Consequently institutions of higher learning have increased in number, size and importance to meet the needs of today's Algerian developing society.

A number of Universities and university centres began to open, specialised higher schools were created to help universities cope with the heavy demand for a highly qualified manpower. Nonetheless the university proved out of touch with its evolving social and economic environment. For, it was for a long time, an ossified institution unfit to meet the objectives set up by the government's development policy. Closely related to this was the fact that the quality of the university cannot be improved in terms of learning and research, unless learning resources, namely library collections are provided and fully utilised.

4/ Development of university libraries.

- The poor academic library system of the early seventies has severely narrowed the scope of significance of feasible changes in the University and hampered the implementation of promising undertakings which would have been made possible if more attention was given to libraries at an earlier stage. The increase of the number of students has further narrowed the scope within which the library can fulfil its requirements. This thereby made Higher Education notorious for its inadequacy to supply the various sectors of the country's economy with well equiped manpower.

In the awake of the expansion programme of institutions of higher learning, it became urgent to find means of expanding libraries attached to them to be able to make the effective contribution for the achievement of the objectives set up for Higher Education. On the other hand, the growing number of students calls for better libraries to reinforce their knowledge and extend its boundaries. There is no denying the validity of the value of tertiary education in a country like Algeria which suffers from the dependence on foreign manpower in all spheres of life. This, however, should not be taken as grounds for overlooking the significance of reading in the overall educational process, nor for thinking that libraries and education are like two sides of the same coin, as they

belong to the same world.

Libraries are the open access to other cultures and civilisations, whereby, through books, students can strengthen their ideas, practising their interpretation abilities without any pressure, and they can learn to compare nations and systems. They can learn models of behavior, broaden their horizons and enlarge their fields of acting and thinking, and thereby are well prepared to take challenges placed upon them in their lives of studies, at work and in the realm of entertainment.

Moreover, Education provides one with the ability to acquire knowledge, and the library is the principal agent which supplies this knowledge. University libraries in Algeria have not been given enough opportunities to undergo these activities. In Higher Education, learning system became even more dependent upon traditional lectures with stress on note memory and merely a repetition of memorised facts to pass examinations. The danger facing Algerian students became apparent, as they grew up in a non-reading environment. The system of priorities adopted by the government in the sixties and early seventies has put all academic libraries in the most unfortunate position. Under these conditions, tensions have been buildt up at an alarming pace: reaching staff began to protest against authorities' inaction to improve the library system to back up their teaching programmes. They

threatened to close down courses that are not supported by the basic library collections. Along these lines, students resented the whole library situation as they found it very inadequate. Library staff lost hope in the profession and began to shift to other jobs. It is also important to note that some detrimental results to the library system in the Algerian University are simply due to the lack of cooperation between the University and its library including:

a. the lack of understanding each other's motivations,
b. differing views of the university authority and the library's regarding the importance of the library in the university.

Furthermore, the increasing specialisation in the world, which, in a way, is both a foundation of modern life and no less a product of it makes the need of a good library and information system necessary to keep pace with innovations and follow their development through research and published works. It is against these facts that the authorities recognised the importance of the library in the society's progress and, therefore, appointed a National Commission to identify the problems hindering the development of the university libraries. These problems can be classified under three major headings:

1. Problems related to the national development policy, which concentrated too much on some economic and social aspects of the country leaving some important areas untouched; namely

libraries in all their types.

2. Problems related to educational policy development which gave more attention to the creation of educational institutions, their organisation and structure.
3. Problems related to the reform of Higher Education which is looking for a compromise between western science and technology and Arabo-Islamic traditionalism, with very little equipment to keep the balance between both.

Whatever the order of priorities adopted in this case, and, although they do not fall under the same heading, they are so closely related that it is impossible to deal with them seperately. Even, prominent professional librarians, in the most developed countries, such as Penna, C.V. *et al* recognise the importance of political decisions in the development of information service in any country when they write:

> *From the national and international levels downwards, policy formulating depends on political decisions. That is, decisions made on behalf of a whole community - taken by small groups or even single individuals who have been given a mandate to represent much larger groups, such as whole nations...*[12]

Algeria is no exception to this general predominance of political decisions. This is why, in 1973, the government decided to pick on political ideology and philosophy that would help to improve the library and information system. There is no doubt, therefore, that the development of university libraries will be influences by the reorganisation of Higher Education. At a time when Algeria is engaged in a struggle to revolutionise its university system, it is very crucial that the role the university libraries will play in support of democratic education be realised at the outset.

Reading the document entitled: "*l'Application de la Gestion Socialiste des Entreprises (GSE) au Secteur de l'Enseignement Superieur et de la Recherche Scientifique*", published by the Ministry of Higher Education in April, 1979, one gets a clear impression that the policy-makers have forcefully echoed the importance of the book. In other words, the library, by emphasising that the former is as vital as bread:

> *Le livre est un produit de nécesseté au méme litre que le pain.*[2]

Another significant development that took place in 1976 was the first attempt to introduce library education in universities. In October, 1976, a Department of Librarianship, Archives and Documentation was opened in the University of Algiers, although, up to date, the

creation of this department does not seem to have achieved any substantial progress, since the university libraries continue to suffer from the acute shortage of qualified manpower. In the same year, the National Charter, Algeria's new constitution, came with a bundle of promises for libraries in general. For example, the Ministry of Information and Culture launched a public library expansion programme of 1,000 libraries to eater for the public in rural and urban areas. At the same time, the Ministry purchased 200,000 books in order to continue to stock the existing municipal libraries.[3] This is considered a break throgh in libraries and information field, and is, indeed, a challenge to any library and information worker in the country.

As far as University libraries are concerned, no special paragraphs in any official publications were produced, but only passing references in declarations devoted to universities. No special comprehensive plan for their development has been prepared in the seventies, althogh the principles of the Cultural Revolution assigned the heaviest tasks to the University, such as, producing the manpower needed to upgrade the country's economy, a manpower which thinks and acts within the framework of the Cultural Revolution. However, for some changes to occur, such as, the shift towards science, some preconditions must be recognised as essential to such a change, including a good library system to allow the easy

flow of information upwards, downwards and across; and the presence of a formal framework to increase research and accelerate the transfer of technology from the developed nations. Moreover, for a university library, or, indeed, any library to be effective, it is essential that it houses enough information in print and non-print, and provides satisfactory channels of communication for a proper circulation of this information. Unless these two essentials are present in university libraries, these will continue to prove unable to meet the users' needs in terms of teaching and research.

Similarly, universities and, indeed, Higher Education in a whole, will continue to exhibit its incapacities to respond to the national changing needs. Lundu quoted:

> *The University library is a part of society and does not, in any sense, exist in a vacuum, nor does it pursue its own course isolated from happenings around it.*[4]

This kind of thinking is what appears to be stressed in the following declaration by Algerian officials in 1980:

> *Nous constatons des lacunes chroniques au niveau des bibliothèques universitaires des efforts énormes doivent être déployés dans ce domaine, de même qu'il est nécessaire de définir une politique nationale*

du livre qui réponde aux besoins de l'enseignement supérieur et qui soit en conformité avec les orientations fondamentales du pays.[5]

It is grafitying to note that the government admits that libraries are not making any substantial contribution to the national development. In other words, it is a way of saying that the university libraries should play an important part in the development of the country. Undoubtedly, this is a big challenge to library and information services. But, are the Algerian information workers ready to take up this challenge?

In 1979, there were approximately sixty-six libraries of Higher Institutions (universities and others); at the same time, the number of professionals was thirteen (seven librarians and six documentalists). This leaves very few universities with one professional. Most of the university libraries are up to date under the responsibility of lecturers or para-professionals. Also, the few professionals operating at that level are very badly allocated, for instance, Constantine University library has three qualified members of staff: these are the librarian, his deputy, and a graduate documentalist. Whereas, some important university libraries are under the accountability of a clerk, such as Batna University library. There are also cases where one professional is required to head more than one library at a time. This is especially true in the

case of the Chief Librarian of Oran University library, who is also looking after some departmental libraries within the same University, that leaves him with a heavy burden of responsibilities. This lack of qualified and semi-qualified staff to meet the demands for library services has severely hampered and frustrated the most strennous efforts to provide essential library services. Some standards, such as the Canadian one, recommended a minimum of one professional for every 300 students. The leading University of Algiers, with some 18,000 students, has only one graduate qualified librarian. The total number of students in the country is estimated to about 70,000 and a total of 120 professionals and para-professionals according to a UNESCO document.[6] This lack of appropriate manpower, had caused oversimplified attitudes towards university libraries which developed on an *ad hoc* basis: unplanned, uncoordinated and unbalanced. Furthermore, each university does what it wants with its library and according to how it is viewed by the university authorities, with no reference to what other universities in the country did or/ and are doing. This was partly because there was no cooperation between universities and their libraries and partly because the communication systems which link them were very poor. For, Algerian librarianship in general, has no clear policy and no legislation; and this situation is still prevalent despite many attempts to improve it.

C O N C L U S I O N.

- Without being doubtful about the emphasis put on better planning on higher education, it is a fact that Algerian University libraries are stillfacing a plethora of problems. However, there are attempts indicating that some improvements are under way. For, the contributions of the government are no longer ink on paper. With more funds and a better structured library education in other words more and better qualified staff, things began to move forward but there is still a lot to be done then will the Algerian Libraria and information worker be able to take up the challendes facing them

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The Library and Information Profession Viewed in the Light of Technological Change

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THE LIBRARY AND INFORMATION PROFESSION VIEWED IN THE LIGHT OF TECHNOLOGICAL CHANGE

Historical Background

The period of the Second World War and the years immediately following it produced, as one result of the prodigious war efforts on both sides of the hostilities, the beginnings of a new era of technological change. Agencies in Europe, North America and elsewhere, driven by the need to serve their governments' interest by deciphering the codes and cryptology devised by their counterparts working for opposing governments, were staffed by men and women who adapted mathematical theories to unravel the secrets of ENIGMA and other variations of highly encrypted communications. Science, but most especially mathematics and physics, designed sophisticated weaponry, provided new techniques for its use, and also handled the myriad problems of codes and ciphers. Out of the work done in this field, in both Europe and North America, sprang much of the new technology which has given us the"Post-Industrial Society" of Daniel Bell, an age more commonly referred to as the "Computer Age". This is an age whose attributes and characteristics are taken, by at least one writer, Jeremy Campbell, to inlude an inquiry into the relationships between language, information, entropy and biology.[1]

In 1936 a British mathematician, Alan Turing, published a scientific paper in which he described a new type of logical machine.[2] The paper, which discussed logic machines and their limitations, also presented the theoretical specifications for what we now call programmable computers. Toward the end of World War II and after it Turing was working on what he envisaged as a "brain", an automatic computer engine which he called ACE.[3] While he was working in Britain two major projects were underway in the United States. the EDVAC and ENIAC projects, which involved the building of giant analogue computing machines.

The latter was specifically developed to assist in speeding up mathematical operations to aid in the final war effort, especially the development of the atomic bomb. Turing's ACE was also used entirely for mathematical operations at first. Turing however, did not see "number-crunching" as necessarily the sole function of the new technology, neither for himself nor for the Americans. Quoting from Turing's personal papers, his biographer reveals that:

> The ACE was to solve those problems which can be solved by human clerical labour, working to fixed rules, and without understanding , restricted by the size of the machine to cases where the amount of written material which need be kept at any one stage is limited to . . . 50 sheets of paper and where the instructions to the operator could be described in ordinary language within the space of an ordinary novel. [4]

Turing, giving an address in 1947, went on to say that:

> The ACE will do the work of about 10,000 [human] computers. It is to be expected therefore that large scale hand-computing will die out. [Human] computers will still be employed on small calculations, such as the substitution of values in formulae, but whenever a single calculation may be expected to take a [human] computer days of work, it will presumably be done by an electronic computer instead. This will not necessitate everyone interested in such work having an electronic computer. It would be quite possible to arrange to control a distant computer by means of a telephone line. Special input and output machinery would be developed for use at these out-stations, and would cost only a few hundred pounds at most. [5]

From all of this he also saw the need for the development of a new set of personal, and perhaps, professional skills:

> It will be seen that the possibilities as to what one may do are immense. One of our difficulties will be the maintainance of an appropriate discipline, so that we do not lose track of what we are doing. We shall need a number of efficient librarian types to keep us in order. [6]

Two years before this speech forecasting the need for a new discipline Vannevar Bush published his now classic description of MEMEX in the article "As We May Think", which appeared in the Atlantic Monthly in 1945. In it he

forecast the arrival of the desktop computer. During the same years that Turing and Bush were writing scientific publishing was expanding enormously. The Royal Society convened the Scientific Information Conference in 1948 to discuss the problems involved with organizing and handling the torrential output. Coping with organization as well as with calculation was something which Turing expected from his computing machine.

Although Turing's biographer tells us that, in the late 1940's, Turing was "twenty years ahead of his time",he not only went to great lengths to explain how his Automatic Computing Machine would work he also held fast to the belief that the computer could rival human intelligence in certain areas of work. In a 1950 paper entitled "Computing Machinery and Intelligence", Turing claimed that computers not only would be able to imitate human intelligence perfectly, they would be able to do so by the year 2000. J. David Bolter, noted that many computer specialists followed this belief so absolutely that they developed the new concept of "artificial intelligence". While Bolter suggests they were partly swayed by the enthusiasm which often accompanies new and startling inventions, he also thought that if one could not say where applications of electronic control and command might end, it might be natural to expect or believe that the machine would eventually operate without the need for a human operator. Bolter then goes on:

> I think, however, that Turing's claim has had a greater significance [than claims made for radio or television as inventions]. Turing was not simply exaggerating the service his machine could perform. (Does a machine that imitates human beings perform any service at all? We are not yet running short of human beings.) He was instead explaining the meaning of the computer for our age. A defining technology defines or redefines man's role in relation to nature. By promising (or threatening) to replace man, the computer is giving us a new definition of man, as an "information processor", and of nature, as "information to be processed". [7]

Bolter argues that Turing's men, even those among them who have re-

jected the notion that there will be an artificial intelligence by the year 2000, will, if they work intensively with computer technology, come more and more to speak and think in terms suggested by the machine. He views such men as the "most complete integration of humanity and technology, or artificer and artififact, in the history of Western cultures".[8] If one can make a machine think as a man, man can, and may, define himself as a machine.

> Men and women of the electronic age, with their desire to sweep along in the direction of technical change, are more sanguine than ever about becoming one with their electronic homunculus.[9]

To some extent this line of thinking is in the tradition of earlier views, such as those held by the Cartesians as they discussed the concept of a universal mechanism for their cosmology. The similarity may not, in this century, be as close as it seems.

The Modern Information Society

The main characteristics of Western society which need concern us here are these: we live in the "knowledge society" or the "information age"; this is the age of a technology which is rapidly eliminating international barriers in the realm of communication signals; it is an age increasingly concerned with understanding the nature of information, as distinct from knowledge, and with understanding the principles of communication theory not only from the point of view of electronics but also from the concepts of cognitive psychology and neurophysiology. At the present time information is considered as an object in the flow of messages between members of the community of science and technology. It can be stored electronically in the form of symbols or in printed or audio records. With the new technology it can be transmitted electronically in whole or in part. Knowledge is usually defined as a structured, coherent organization of information, an organization determined initially by the recipient's interpretation of the information transmitted or given to him. As the "structuring"

progresses it becomes more generally accepted as the authoritative body of concepts underlying a particular discipline. As new pieces of information are transmitted, the structure is likely to be altered, or, occasionally, razed to the ground so that a new structure can develop. Information and knowledge do share one characteristic: both can be viewed as commodities.[10]

One of those whose writing about the formation of the "knowledge society" is Daniel Bell:

> The post-industrial society, it is clear, is a knowledge society in a double sense: first, it the sources of innovation are increasingly derivative from research and development (and more directly there is a new relation between science and technology because of the centrality of theoretical knowledge); second, the weight of the society -- measured by a larger proportion of Gross National Product and a larger share of employment -- is increasingly in the knowledge field. [11]

While Bolter's concerns about the type of "man" who may be the product of exposure to Turing's invention certainly merit our serious attention, there is little escape from the fact that much technological change has occurred and is continuing to occur. It is also true that technological change induces behavioural change, although one sometimes asks if things occur the other way round. We cannot always determine whether is a question of "technology push" or"demand pull".

A major result of information-communication technology change, which speeds the flow and broadens the range of available information, is the shortening of the time available and the increase in the amount of information demanded in any problem-solving situation. We are always kept on edge, struggling to meet time demands and to provide <u>enough</u> information in that time. Not simply <u>enough</u>, but the <u>right</u> information is what is needed. We do not necessarily want more information, but there is an implicit assumption that, given greater quantity, greater quality of resulting product or decision will be derived. This is a kind of folk-rendering of the recall-precision

curve.

If we go back briefly to the previous wave of mechanization which hit libraries, as far back as the 1950's, what we now term "high-technology" storage equipment was found mostly in microforms, used chiefly for archival materials and a few other types of records. We had the TWX for inter-library loan; photo-copying of items was rarely done. Searching other libraries' holdings was limited, in the main, to the existence of union catalogues, the occasional published collection catalogue such as those of the British Museum or Harvard, and serial lists. It was rare to find much work done on automatic information retrieval as part of a library operation, and practically unheard of to find such topics discussed in library schools, let alone being considered for inclusion in the curriculum. The emphasis on operating the average library, even where it was closely connected to a research establishment, was on providing information through the collection it actually possessed. Buying, processing, and circulating the collection, and the provision of reference services, personalized or general, occupied the professionals' time. Perhaps, although this was not altogether what he meant, this orientation was best expressed in Jesse Shera's maxim that it was the role of the librarian "to maximize the social utility of the graphic records". Those who failed to carefully examine his phrasing, or who may have misunderstood his philosophy, assumed he was referring entirely to printed information available, or potentially available, in their library's collections.

Advances in telecommunications linked to computer technology have brought Marshall McLuhan's "global village" from speculation to reality. As the computerized technology makes advances in the "information society" it becomes an increasing part of the reality in the library and information centre scene. Technology related entirely to the information-transfer process is rapidly turning library services from isolated, one-shop services (or occasionally up to five or six linked operations), into international and even global services.

This situation has changed the orientation of much professional library/information service work. Greater emphasis can now be placed on solving a client's problems, rather than on merely finding his documents. Such an approach comes out of the "systems approach" or from operations research as much as it stems from the technological hardware. One needs a different attitude toward solving the problem: one must find all that is needed, or at least all that is available, not simply what one has on hand. There is a change in demand, a change toward global thinking, and one's service capability changed in the direction of providing global service. A high school library in Denver may contain materials, and hence the solution to a problem, needed by a geophysical researcher in Leningrad. Such shared cataloguing systems as those developed by OCLC, RLIN and UTLAS not only permitted processing of more materials faster, since libraries need not spend time duplicating effort, they also allowed access to other collections and so facilitated development of expanded reference service. The online catalogue soon ceased to be enough from the standpoint of information services trying to meet users' needs, especially after non-library produced services such as Lockheed Corporation's DIALOG were designed and marketed. These services have permitted a gradual transition in the size of the descriptive record, particularly for journal articles and technical reports. Over a relatively short period of time such records evolved from a few hundred (at most) characters of citation and subject heading data, to all of this plus a lengthy abstract, and, with increasing frequency, the full text of the article being directly available online. Wilfrid Lancaster's "paperless information society" may be nearer than we have cared to believe. Some journal articles and reports are now only available online, with the user determining whether a print-out will be made or not. More widely known and used are information data bases with non-bibliographical materials -- directories and other information services which require frequent updating.

Alan Turing predicted the arrival of the intelligent computer by the year 2000, a date still fifteen years in the future. Wilfrid Lancaster, writing much later than Turing, writing from the viewpoint of the scientist user has predicted an almost paperless system for scientific communication.[12] His predictions are based on the assumption that most, if not all, such users will have access to computer terminals in their offices and perhaps also in their homes. Had he anticipated the more recent IBM advertisements, he might also have assumed the computers would be whizzed around on the back of a bicycle, perhaps connected by a hand-held portable telephone to a data base on another continent. Lancaster describes the scientist using the terminal routinely, on a daily basis, for three major functions: to create information; to transmit information; to receive information.[13] Along with searching for bibliographical data the user will compose, edit and create text, put questions asking for specific items of information, build personal information files, carry on electronic conversation with colleagues hooked into the same network. Not only is much of this capability already developed, it is in fairly heavy use.

> The publication of primary research literature in the year 2000 may in fact be a more or less direct electronic analog of the present system. Descriptions of on-going research projects will get into online files similar to those being maintained by the Smithsonian Science Information Exchange. [We might note here that the Library Association's Current Research is now accessible through DIALOG.] Patents will be stored in machine-readable patent files, dissertations in dissertation files, . . . and so on. Unrefereed technical reports would be accessible through data bases maintained by government agencies and other sponsors of research. Science "journals" would continue to be published by professional societies and commercial enterprises. By this I mean that these organizations would build machine-readable data bases, in special subject areas that would be roughly comparable to the present packaging of articles into printed journals. [14]

"Published" materials can be delivered faster and with more precision of selectivity for the user. The user's approach through a personal com-

puter terminal, or even through the intermediary (librarian), can result in a difference in the size of the package of information provided. As the graphics capability of the computer technology becomes more sophisticated the package will change character again.[15] The users will expect the data, or the name or the "fact", not necessarily a bibliographical reference which may or may not contain the solution to the problem, and which may or may not be in their particular library. The suggestion that the size of the package finally given to, or selected by, the user, will be smaller, does not imply that the total volume of "published data/information" will shrink, only that more selective approaches to it can be developed through the use of the technology.

Bolter worries about man becoming a "machine" through heavy interaction will it; Campbell writes of the relationships between language and communication on the one hand, and biology, neurophysiology and physics on the other. Communication theory, and even the facilitation of communication through the use of the new technology may require the design of a new professional. Such a professional may need to understand engineering, electronics, cybernetics and even be expert, or at least informed, in the disciplines of cognitive psychology and semiotics. The technology which has brought real change to the library/information service forces us to rethink the professional appraoch as well. It does not automatically follow that the new professional degrees should be in engineering or computer science (although it is now recognized that the information worker must not cringe in horror when confronted with such technology), but as users see what the technology can deliver to them and so expect it, the information worker/librarian finds a role different than before and much broader in scope.

In this new role the information worker may become a member of a problem-solving team, either on a formal or informal basis. To a much greater

extent he may be involved in deciding what information is to be used and how it should be interpreted, in addition to locating documents pertinent to the topics in question.

Through direct use of the technology users may grow more sophisticated in working with it and may even be building and maintaining their own data bases as well as doing their own online searches and ordering materials directly. Such use of the online network can be managed without any library involvement. The users may still need help in learning how to get maximum mileage out of their own hardware and how to select the best software and services from the plethora available to them. This is help at a different level than has previously been considered part of library service. The information specialist may find himself being asked what information should be considered, what is reliable, and even how one can recognize the"answer". He may have to explain the mechanics of getting one's own information or how one system can communicate with another. The specialist will need more subject knowledge since conversations will be on a higher level from former reference interviews when users asked hopefully for what "the librarian could recommend on a particular topic" and then went off to evaluate what they were given without knowing what more was available, either in the local "store" or elsewhere. The new professional must have more knowledge of particular subject matter and of information sources as well as of the mechanics of search and transfer. Expanding telecommunications technology requires knowledge of how to link voice, message, image and data and computer resources with individuals, regardless of where they live. Through developments in fibre optics all these can be sent over a single integrated network at a range of transmission from low to high speed. It is now seen as necessary to develop flexible integrated networks whcih can meet the needs of both individual users and complex organizations. Video discs and videotex offer new capabilities in transferring information. The new information professional should be aware of

their uses and capabilities as well.

The global concept of information communication requires us to rethink what the characteristics of professional training should be. Previously, information services were mainly available in libraries (of one type or another), and usually as documents presented for consideration. Within the global scheme of things the importnace of the individual library decreases. In a paper prepared for the 39th FID Conference (Edinburgh, 1978), Gernot Wersig and Thomas Seeger discussed the question of future professional education and observed that:

> Information/documentation is an area which, on one hand, is rather disperse and needs symbols of identification and a common consciousness, and on the other hand is involved in competition with other much stronger areas of social life which are also concerned with information in the widest sense. Such problems could only be solved -- if ever-- by a well developed profession. And a profession in one important sense, defined by a developed education and training system. [16]

Information Science Education

It is not the purpose of this paper to outline a specific program or even alternative programs which might be considered for training the new professionals, nor even to argue whether they should be degree programs in their own right or introduced as components of existing programs. It is fairly common knowledge that some separate degree programs are already established, and more are being proposed, which by their name and curriculum content, indicate a direct focus on information technology. Such programs can be found in both Europe and North America and in Japan. What is offered here is an account of a changing situation and a suggestion for a partial theoretical framework or theoretical philosophy which might be the basis for such program development without creating a generation of "Turing's men" as described by Bolter. The most important educational asset which the information worker of the future should bring to the profession is a sophisticated level of technological understanding -- an understanding not only of the potential of

the technology in the information environment but also of the ways in which its various components can be linked to enhance this potential. Wersig and Seeger make these points:

> The larger definition of information/documentation suggests that professionals should be ready, in principle, to work in all the different fields of activity. This cannot be achieved by training in the acquisition of specific skills needed in one institution, or type of institution, but by educating the future professionals in knowledge of the general principles in all the fields.
>
> The multiple step processes, with several alternative possibilities for information being channelled from the place of production to the places of demand, require more and more knowledge of the application of alternative methodologies -- which requires a specific professional training. [17]

The emphasis on the need for broadly educated persons for information work is also reflected in the set of goals prepared for a proposed Master of Information Science (MIS)program at the University of Toronto.

> The goals of the program are to produce highly skilled, broadly educated persons who will:
>
> Design, develop and maintain information systems characterized by large volumes of data, diversified by form and by user population;
>
> Provide leadership in the humanizing of technology, to make it the servant rather than the master of society;
>
> Contribute to the development of new technology and new applications related to the delivery of information to its human users. *

A higher level of support with more detailed foundations for a new theoretical framework and broad-based systems for training the new information professionals emerges from an examination of the volume edited by Fritz Machlup and Una Mansfield: The Study of Information: interdisciplinary messages; [18]

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* Unpublished internal document, School of Graduate Studies, University of Toronto. Proposal submitted March, 1985.

published in 1984. They defined their project as follows:

> Our project is to analyze the logical (or methodological) and pragmatic relations among the disciplines and subject areas that are centred on information. Disciplines (sciences, academic areas of research and teaching)are orderly arrangements (metaphorically called bodies) of coherent thoughts, formulated as propositions, about things (sense-objects or thought objects) deemed worthy of being known (i.e. being believed with some degree of confidence) and being passed on. [19]

They report that they quickly learned as they explained the interdisciplinary nature of their inquiry to various people, that some of the disciplines they thought worth exploring in this connection (they mention that there were over thirty), defined by such terms as "cybernetics", "informatics", "semiotics", "robotics", "artificial intelligence", were terms many of their listeners had never heard of, or at least would not admit to having heard of. One respondent however, who also contributed a paper to the collection, suggested that:

> What is really needed for a successful inquiry is "an interdisciplinary epistemology . . . integrated with philosophical understanding and with psychological and biological knowledge". [20]

The emphasis in the Machlup and Mansfield collection of papers moves heavily toward the interdisciplinary and team approach. This emphasis on interdisciplinarity suggests that the information professionals will need to be trained to think in the same vein.